Title

Horticultural Assessment Scheme: insight in prevalence and distribution of microbial contamination to evaluate water management in fresh produce processing industry

Introduction

Microbial food safety is a global concern. Particularly, fresh produce is increasingly involved in some outbreaks. Many food borne illnesses are related with contamination during the postharvest processing (e.g. washing, chilling). The source and contamination level of the used water is an important issue that influences the degree of contamination at all stages in the chain.

Purpose

The purpose is to present the concept of a 'Horticultural Assessment Scheme' as systematic approach in sampling and analysis in order to obtain a helicopter view on microbial quality, hygiene and safety level of products and processes in a company. It may help to identify bottlenecks in management of food safety and water.

Methods

A Horticultural Assessment Scheme (HAS) is developed to assess the level of microbiological quality of leafy vegetables during postharvest processing. HAS is a procedure that defines the identification of critical sampling locations, the selection of microbiological parameters, the assessment of sampling frequency, the selection of sampling method and method of analysis, and finally data processing and interpretation.

Results

The results of the HAS showed that (a) neither *Salmonella* nor *L. monocytogenes* were detected in the frame of this sampling plan. It turned out that the (b) total psychrotrophic aerobic count is perceived to be, neither for the fresh produce samples nor for the water or environmental samples, a good indicator of overall microbial quality and good practices during production and processing. And (c) if there is a lack of refilling the water and high product/water ratio's, a fast build up of *E. coli* and transfer to the end product occurs.

Significance

The results obtained by analysis of hygiene indicator *E. coli* along with the information obtained on the ratio of the product/water used in the washing baths and frequency of refilling water enabled to evaluate water management in these two companies involved in production of pre-packed cut fresh produce. The companies need to validate their water management and optimize the process to guarantee a proper water quality from the start until the end of the process. However, the difficulty about a proper water management is the lack of guidelines on acceptable microbial contamination in wash water, product/volume ratio and frequency of refilling fresh water to washing baths.